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Industrial Water Conservation:

Sustainable Development on the 495 Corridor

Workshop Agenda
The annotated agenda below provides a brief summary of topics covered at the October, 2001 Industrial Water Management workshops, along with links to further information.

Program Introduction
Paul Richard, Director - Massachusetts Office of Technical Assistance
As a result of the considerable growth in this region of Massachussetts, there has been greater stress on the water resources. Many companies are facing limits on water consumption or further restrictions on their wastewater discharge. The intent of this workshop is to help industries maintain a flexible manufacturing operation as there is more competition for the limited water resources they rely upon.

Water Demand Growth Trends (Marlborough only)
Martin Pillsbury - Metropolitan Area Planning Council
For a region of 43 towns near I-495 west of Boston, a series of charts and graphs of water demand are presented as the result of the development that has taken place over the last decade. Towns where water use has already exceeded permitted withdrawls, towns exercising water use restrictions, and demand/supply projections for the next decade.
http://www.mtpc.org/ and http://www.mapc.org/

Water Issues Along Interstate 495 - Responding to Constraints on Supply and on Wastewater
Patrick Rogers - Taunton River Watershed
Overview of agencies involved in water supply issues and where the Watershed Initiative fits in. Summary of current situations in 9 towns in the I-495 region south of Boston. The proposed Dighton desalination facility receives MEPA approval to recycle water from the lower Taunton River to the upper parts of the watershed.
http://www.mass.gov/envir/

Nancy Bryant - SUASCO Watershed Community Council
For a region of towns near I-495 northwest of Boston, a series of maps, charts, and graphs are presented showing historical and projected growth of populations, commercial and residential land uses, water demand and wastewater assimilative capacity of the watershed.
http://www.mass.gov/envir/

Madelyn Morris - DEP, Bureau of Resource Protection, NERO (Tewksbury only)
Cities along the Merrimack River may not have the same water supply concerns that the more westerly towns have, but water and sewer rates will be increasing to cover the cost improvements to an aging infrastructure. Towns of the Ipswich watershed have been struggling to resolve water use deficits for a number of years. Development projects in South Shore communities are water limited and are considering supply from the proposed Taunton River desalination plant.
http://www.mass.gov/dep/nero/

Doug Fine - DEP, Bureau of Resource Protection, CERO (Marlborough only)
The growth spurt of the late '90s has exerted new pressures on the water resources in the western I-495 region. New approaches to water supply and wastewater treatment are needed for sustainable growth. The Water Management Act strives for comprehensive assessment..... Regulations must be flexible to accommodate innovative solutions such as the grey water recycling employed at EMC's office expansion in Hopkinton and at the Wrentham Mall or mini-treatment plants for condominium complexes. The small streams in the region have reached

their limits for discharges from wastewater treatment plants so the new direction is to discourage new centralized sewers and encourage more distributed treatment of wastewater, keeping water more local.
http://www.mass.gov/dep/cero/

Evolving Regulations for Facility Water Uses
Wallace Hack - DEP, Bureau of Waste Prevention
DEP regional service centers are helpful. Regulations for industrial wastewater discharge to municipal sewers, to surface , and to ground discussed. Increasing use and discharge of water causes overloading of older central pump stations and sewer lines. Total water reuse in of waters from non-production areas and "zero-discharge" of water from production areas is encouraged and more frequently becoming a reality.
http://www.mass.gov/dep/

Best Strategies for Water Management Effective Use of Information Resources and Technology
Marsha Gorden - The Resource Technologies Group
First obtain management and employee support. Take an inventory of water uses. Install sufficient number of meters to understand where and how water is used. Monitor the readings frequently enough for timely inquiries when there are significant changes. Determine minimum quality and quantity requirements and how they may vary. Know all of your water-related costs, not just the water and sewer rates. Identify and evaluate water efficiency measures. Prepare an action plan. Implement the plan. Track it and report the results.
http://www.mwra.com/

Technologies for Greater Water Efficiency Integrated Membrane Systems for Water Reuse
Chris Gallagher - Ionics Company (Taunton)
Janet Persechino - Ionics Company (Tewksbury and Marlborough)
Microfiltration, ultrafiltration, reverse osmosis, electrodialysis reversal, and electrodeionization discussed and how combinations of these may be used to achieve multiple water treatment goals, minimize capital & operating costs, achieve high quality water for reuse, and minimize volume for waste disposal. Several installations discussed, including one which achieved "zero liquid discharge".
http://www.ionics.com/

When You Have Water Intensive Products - Case Study
Dennis McBride, Sr. Engineer - UPW & WW, Intel Corp.
Approaches to water management. Where water is used in semiconductor manufacturing. Water recycling phobias in corporate culture. Increasing production capacity in a limited water supply situation. Effective water management (and its inherent requirements for process knowledge and expertise) to achieve a facility-wide average 50% reduction in water use factors.
http://www.intel.com/intel/other/ehs/

Zero Discharge by CASTion
Steve Brown, V.P. Eng. and Ed Santini, Sales Mgr.
Developer, manufacturer, and installer of zero-discharge wastewater/process chemistry recovery systems. Case study presented of how a Massachusetts electroplating company has employed CASTion's vacuum flash distillation and vapor recovery system to virtually eliminate the cost of hazardous waste and process effluent disposal. At the same time nearly 100% of valuable chemical resources and water are recovered for reuse at the facility.
http://www.castion.com/

Cooling Systems for More Efficient Uses of Water and Energy
Ted Rudy, Engineering Mgr. - Process Cooling Systems, Inc. (Taunton and Tewksbury)
Over the last decade most manufacturers with cooling requirements of any significance have replaced once-through cooling water with recirculating cooling systems. The changes are ususally economically justified, but sometimes they are also motivated by regulatory requirements. Basics of cooling towers and refrigeration systems are discussed, plus current designs for greater water efficiency and greater energy efficiency.
http://www.ashrae.org/

Motivational Tools for Water Conservation
Brian Towns, Corp. EHS Mgr. - Corning MicroOptics Products (Marlborough, only)
When management pays directly for water and wastewater treatment functions, conservation happens. When it is buried in the overhead of the organization it is often neglected and consumption rises.

Water Conservation at a Biomedical Products Company
Peter Pignone, V.P. Tech. Services - Micron Products, Inc.
Water is used in multiple operations from injection molding to tumbling to electroplating. The need to upgrade and replace wastewater pre-treatment system prompted a water use inventory and subsequent water conservation program resulting in 50% reduction in pre-treatment loading and 30-40% re-use of wastewater treatment effluent.

Geothermal Heating and Cooling
Carl Orio, C.G.D. - Water & Energy Systems Corp.
In New England geothermal doesn't bear the classical connotations of geothermal (as does Iceland or parts of California). Instead, geothermal is heating and cooling that is derived from water approximately 50 degrees farenheit. The water is pumped from wells and utilized directly with heat exchangers or temperature boosted or reduced via heat pumps. Net result - water savings and energy savings.
http://www.w-esco.com/

Best Management Practices for Selected Industries and Additional Resources
(click title to view text version)
Gus Ogunbameru, PhD. Ch. E. - Massachusetts Office of Technical Assistance
Water consumption in the Semiconductor, Metal Plating, Printed Circuit Boards, Paper and Rubbers and Plastics industries is quite high. Knowledge of water balance for the entire facility and specifications for each stream are useful for a program on water conservation. Simple engineering systems such as countercurrent flows, high pressure low volume atomized or fog spray rinsing systems, tying dumping of baths to measurement of critical bath parameters, installing essential instrumentation (e.g. flow restrictors, conductivity controllers, pH meters, etc.) and installing filtration/screening and cooling systems provide options to reclaim, refine and reuse water continuously.

Closing Remarks
Paul Richard, Director - Massachussetts Office of Technical Assistance
If you use water at your company and don't have a water management program, you should start one before supply or discharge constraints impact your operations. You have heard from some of the companies and organizations available to help in your efforts. There are others including a number of other industry specialists at the Office of Technical Assistance.
http://www.mass.gov/ota/staff.htm

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